

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1. (currently amended) A tactile user interface device, comprising:

a substrate;

a plurality of tactile elements disposed on said substrate wherein each of said plurality of tactile elements correspond to at least a fraction of a pixel ~~a pixel, a fraction of a pixel, or a group of pixels~~ on a video display and wherein each of said plurality of tactile elements comprises:

a pressure sensor disposed to indicate if any of said plurality of tactile elements have been depressed; and

a feedback device disposed to convey tactile feedback information; and

~~means for sensing pressure from a user's finger to determine if the user has depressed any of said plurality of tactile elements; and~~

~~means for conveying tactile feedback information to said user.~~

a flexible membrane disposed on said plurality of tactile elements.

2. (currently amended) The tactile user interface device of claim 1 wherein each of said pressure sensors is disposed to provide ~~means for sensing pressure from a user's finger comprises a device that provides~~ an electrical signal when said pressure from a user's finger exceeds a set pressure threshold.

3. (currently amended) The tactile user interface device of claim 2 wherein each of said pressure sensors device that provides an electrical signal when said pressure from user's finger exceeds a set pressure threshold is a mechanical switch.

4. (currently amended) The tactile user interface device of claim 2 wherein each of said pressure sensors ~~device that provides an electrical signal when said pressure from user's finger exceeds a set pressure threshold~~ is a piezoelectric sensor.

5. (original) The tactile user interface device of claim 1 wherein said tactile feedback information includes elevations, vibrations, textures, and temperatures.

6. (currently amended) The tactile user interface device of claim 1 wherein each of said feedback devices ~~means for conveying tactile feedback information to said user~~ comprises at least one microelectromechanical device, wherein said at least one microelectromechanical device has at least two mechanical states.

7. (currently amended) A tactile user interface device, comprising:
a planar substrate;
a plurality of pins disposed on said planar substrate wherein each of said plurality of pins correspond to a pixel, a fraction of a pixel, or a group of pixels on a video display and wherein each of said plurality of pins comprises:

a pressure sensor disposed to determine if any of said plurality of pins have been depressed; and
a feedback device disposed to convey tactile feedback information; and

~~means for sensing pressure from a user's finger to determine if the user has depressed any of said plurality of pins; and~~
~~means for conveying tactile feedback information to said user.~~
a flexible membrane disposed on said plurality of pins.

8. (currently amended) The tactile user interface device of claim 7 wherein each of said pressure sensors ~~is disposed to provide means for sensing pressure from a user's finger~~ comprises ~~a device that provides~~ an electrical signal when said pressure from a user's

Inventor: Custy

finger exceeds a set pressure threshold.

9. (currently amended) The tactile user interface device of claim 8 wherein each of said pressure sensors ~~device that provides an electrical signal when said pressure from user's finger exceeds a set pressure threshold~~ is a mechanical switch.

10. (currently amended) The tactile user interface device of claim 8 wherein each of said pressure sensors ~~device that provides an electrical signal when said pressure from user's finger exceeds a set pressure threshold~~ is a piezoelectric sensor.

11. (currently amended) The tactile user interface device of claim 7 wherein each of said feedback devices is disposed to position ~~means for conveying tactile feedback information to said user comprises a device for positioning~~ said plurality of pins to a plurality of positions.

12. (currently amended) The tactile user interface device of claim 11 wherein each of said feedback devices ~~device for positioning said pins to a plurality of positions~~ is a piezoelectric device.

13. (currently amended) The tactile user interface device of claim 11 wherein each of said feedback devices ~~device for positioning said pins to a plurality of positions~~ is an electromagnet.

14. (currently amended) A method for fabricating a tactile user interface device, comprising the steps of:
fabricating a substrate;
disposing a plurality of tactile elements on said substrate wherein each of said tactile elements comprises [[:]] a pressure sensor disposed to determine if any of said plurality of tactile elements have been depressed;
disposing a flexible membrane on said plurality of tactile elements; and
disposing on said flexible membrane a plurality of microelectromechanical devices

Inventor: Custy

disposed to convey tactile feedback information, wherein each of said
microelectromechanical devices corresponds to one of said tactile elements,
~~means for sensing pressure from a user's finger; and~~
~~means for conveying tactile feedback information to said user.~~

15. (canceled)

16. (new) The tactile user interface device of claim 1, wherein said substrate contains at least a portion of any control circuitry required for said tactile user interface device.

17. (new) The tactile user interface device of claim 1, wherein said substrate contains any required control circuitry and any associated circuitry required for said tactile user interface device.

18. (new) The tactile user interface device of claim 6, wherein each of said feedback devices is disposed on said flexible membrane.